

October 17, 2019

Ex Parte

Marlene Dortch, Secretary
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Re: ET Docket No. 16-56, ET Docket No. 14-165, GN Docket No. 14-166, GN Docket No. 12-268, GN Docket No. 16-142, MB Docket No. 15-146, MB Docket No. 16-306, RM-11745

Dear Ms. Dortch:

On October 16, 2019, Paul Garnett and Paula Boyd of Microsoft Corporation, and Rob McDowell and Henry Wendel of Cooley LLP, met with Joseph Calascione, Legal Advisor for Commissioner Carr. In a separate meeting, Mr. Garnett, Ms. Boyd, and I met with Alisa Valentin, Special Advisor for Commissioner Starks. In both meetings, Microsoft discussed the attached presentation.

Pursuant to the FCC's rules, I have filed a copy of this notice electronically in the above-referenced dockets. If you require any additional information, please contact the undersigned.

Sincerely,



Paul Margie
Counsel to Microsoft Corporation

cc: Meeting Participants



Microsoft Rural Airband Initiative

Connecting the Unconnected

October 16, 2019



Solving Big Challenges

Internet Access

Nearly 49% of the world is not using the internet¹



"With no internet access, there is no cloud access." - Satya Nadella



The connectivity gap in the United States

At least

21.3 million people

lack access to broadband¹

At least

16.8 million people

reside in unserved rural communities¹



Airband Initiative mission – connect the unconnected

We partner with equipment makers, internet and energy access providers, and other stakeholders to make affordable broadband access a reality for unserved communities around the world.

3 Million

People projected to be covered in **rural U.S.** by July 2022

40 Million

People projected to be covered **globally** by July 2022

Our approach

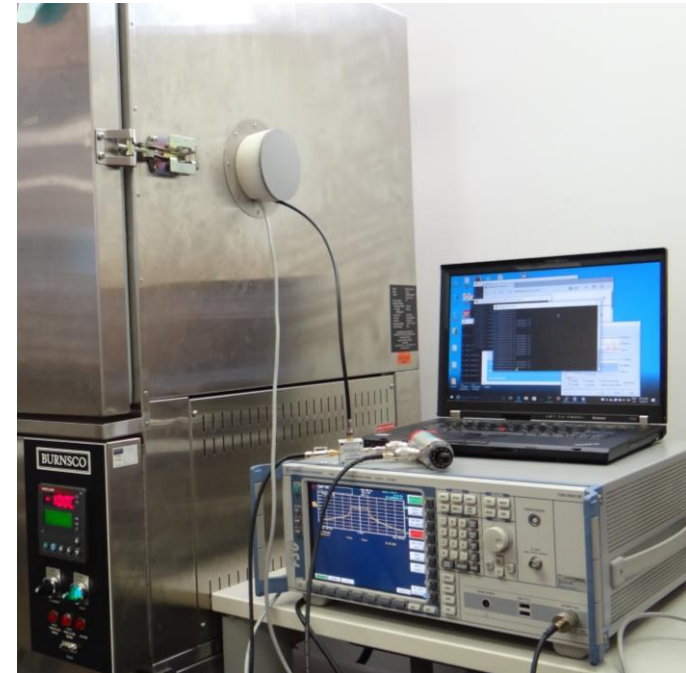
Incubate seed stage partnerships
and projects



Develop enabling technology
ecosystems



Commercialize scalable
technologies and deployments





Focus areas



Healthcare

Telehealth services such as remote monitoring and videoconferencing can improve health outcomes while reducing costs



Agriculture

Farmers can boost income by finding new customers, improving productivity and reducing costs through technology



Education

Schools can expand learning options, offer virtual courses, and enable remote collaboration



Small business

Small businesses can use broadband to work remotely, provide more services and reach more customers around the world

Airband partnerships and programs

Commercial Partnerships

Rural America ISPs

International ISPs

International energy access providers

Hardware and component manufacturers

Independent Software Vendors

Strategic Partnerships

Tower, fiber, and other infrastructure providers

Government agencies

Corporate partners

Industry groups

Airband ISP Program

(no barrier to sign-up)

Hardware and component manufacturers

Telco and ISP infrastructure providers

Independent Software Vendors

Airband USA strategy

Goals:

- **Invest in projects, partnerships, and programs** to cover 3 million unserved people in rural America by July 4, 2022
- **Inspire others** to deploy innovative technologies and business models that will close rural America's digital divide once and for all

How:

- **Co-investment** in broadband deployments – hybrid wireless networks
- **Digital skills** for all ages
- **Royalty-free access** to TV White Space technology patents and source code

Policy Needs:

- Encourage the FCC to ensure **sufficient TV white spaces** is available nationwide and especially in rural areas
- Ensure that **public sector funds**-grants and loans for network operators-are available and targeted to unserved communities
- Work with the FCC to **improve rural broadband coverage data**

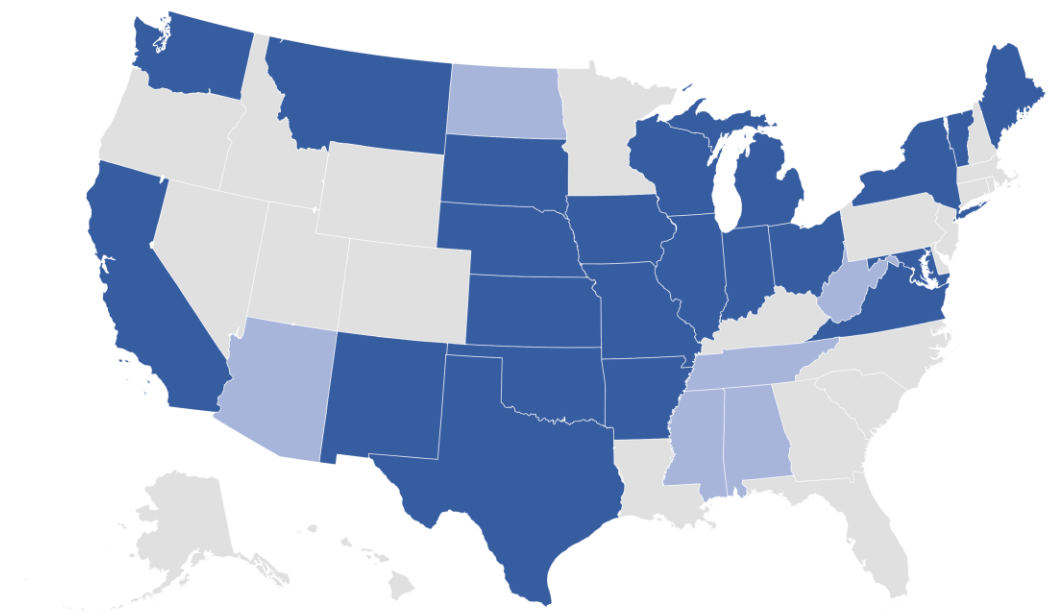
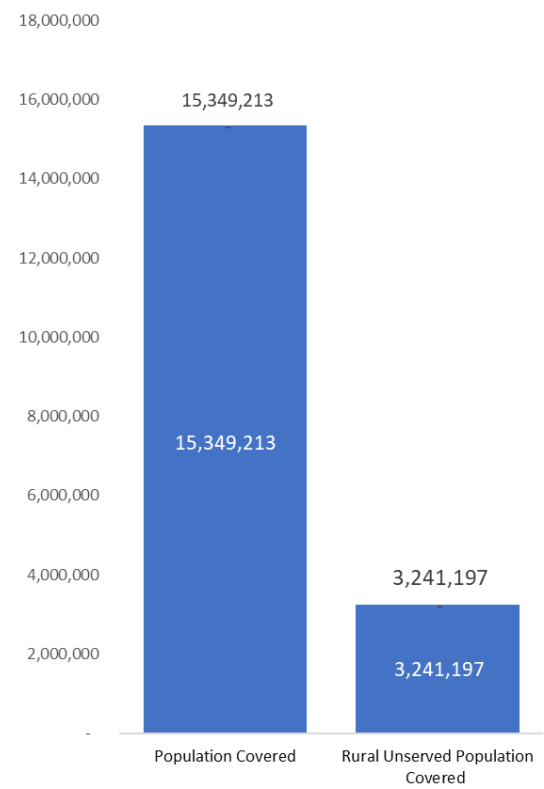
US Overview

The overall goal is to cover 3 million people in unserved rural USA by July 4, 2022

Projected Population Under Coverage by **July 4, 2022**, Based on Current Airband Partnerships

States Covered

Pilot/Grant	Commercial
5	22



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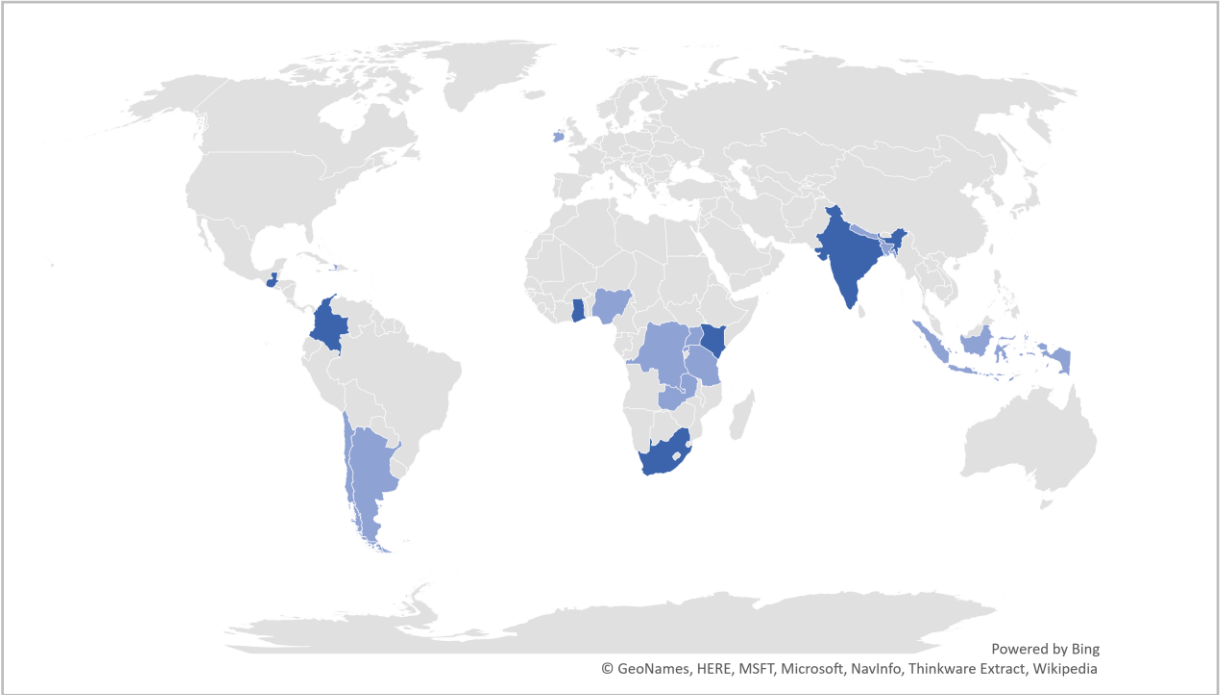
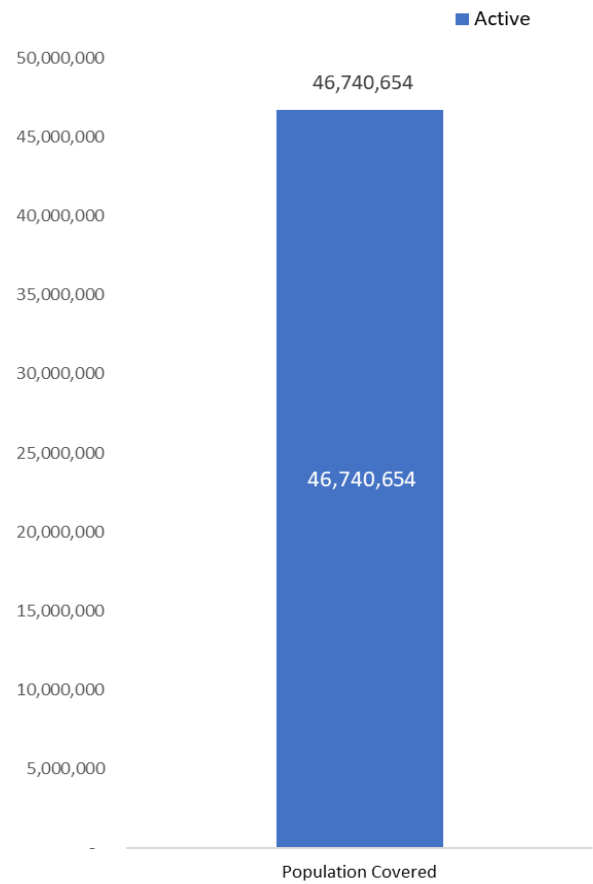
International overview

The overall goal is to cover 40 million people in unserved rural areas globally by July 2022

Projected Population Under Coverage **by July 2022**,
Based on Current Airband International Partnerships

Countries Covered

Pilot/Grant	Commercial
13	6





Cal.net

After obtaining an experimental license through the FCC and conducting testing with the first commercially feasible hardware, Cal.net Inc. leverages the latest TV white space technology to **provide broadband access to over 41,000 unserved rural customers** across the western region of the Sierra Nevada Mountains.

Cal.net



Declaration Networks

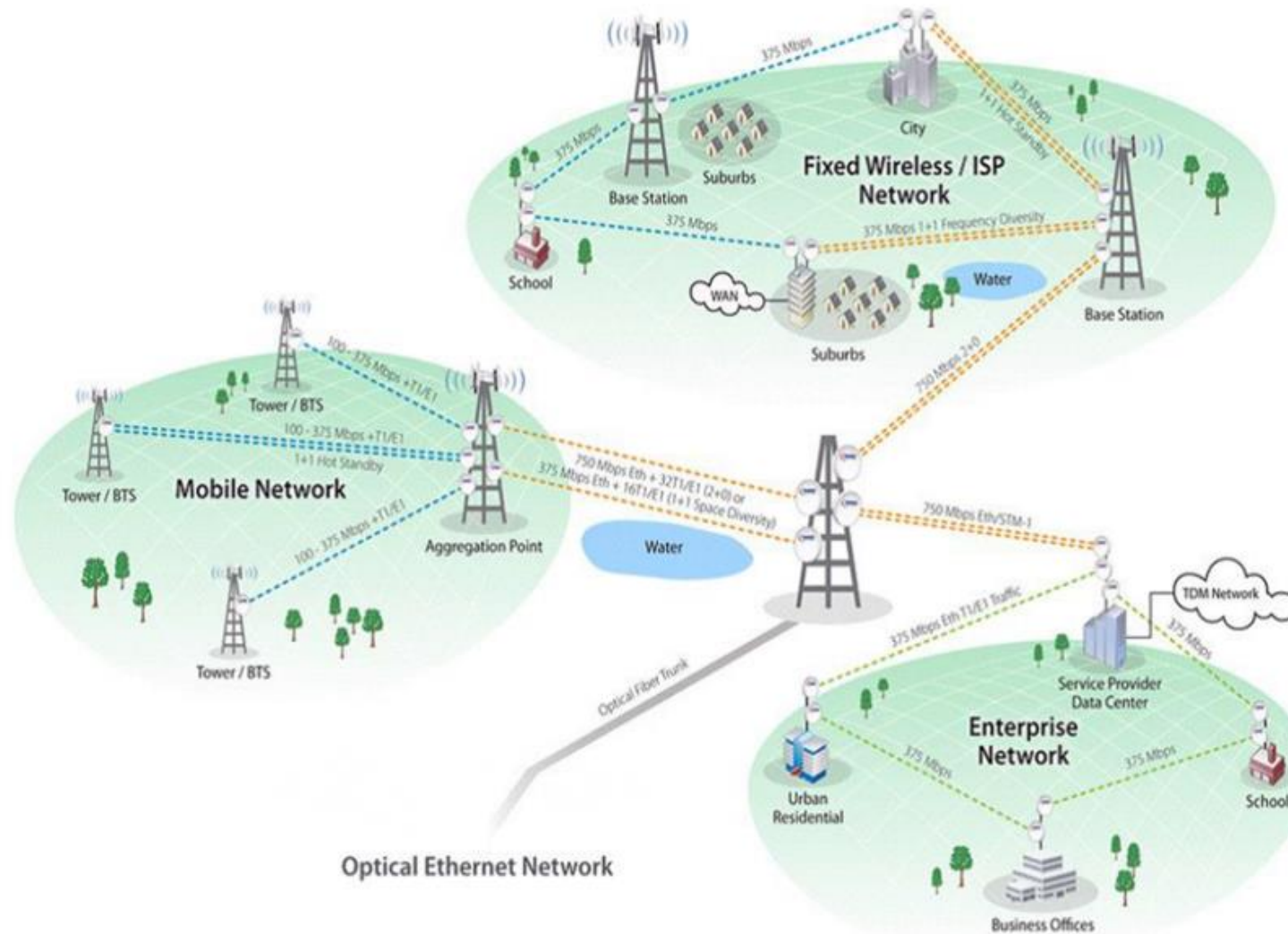
Declaration Networks is changing the way families, small businesses, farmers, and others thrive in rural communities along the Eastern Shore of Virginia and in Garrett County, Maryland.

By using a fixed wireless network leveraging 5Ghz and TV White Space, they plan to provide broadband connectivity to **approximately 65,000 people by 2021.**



DECLARATION NETWORKS

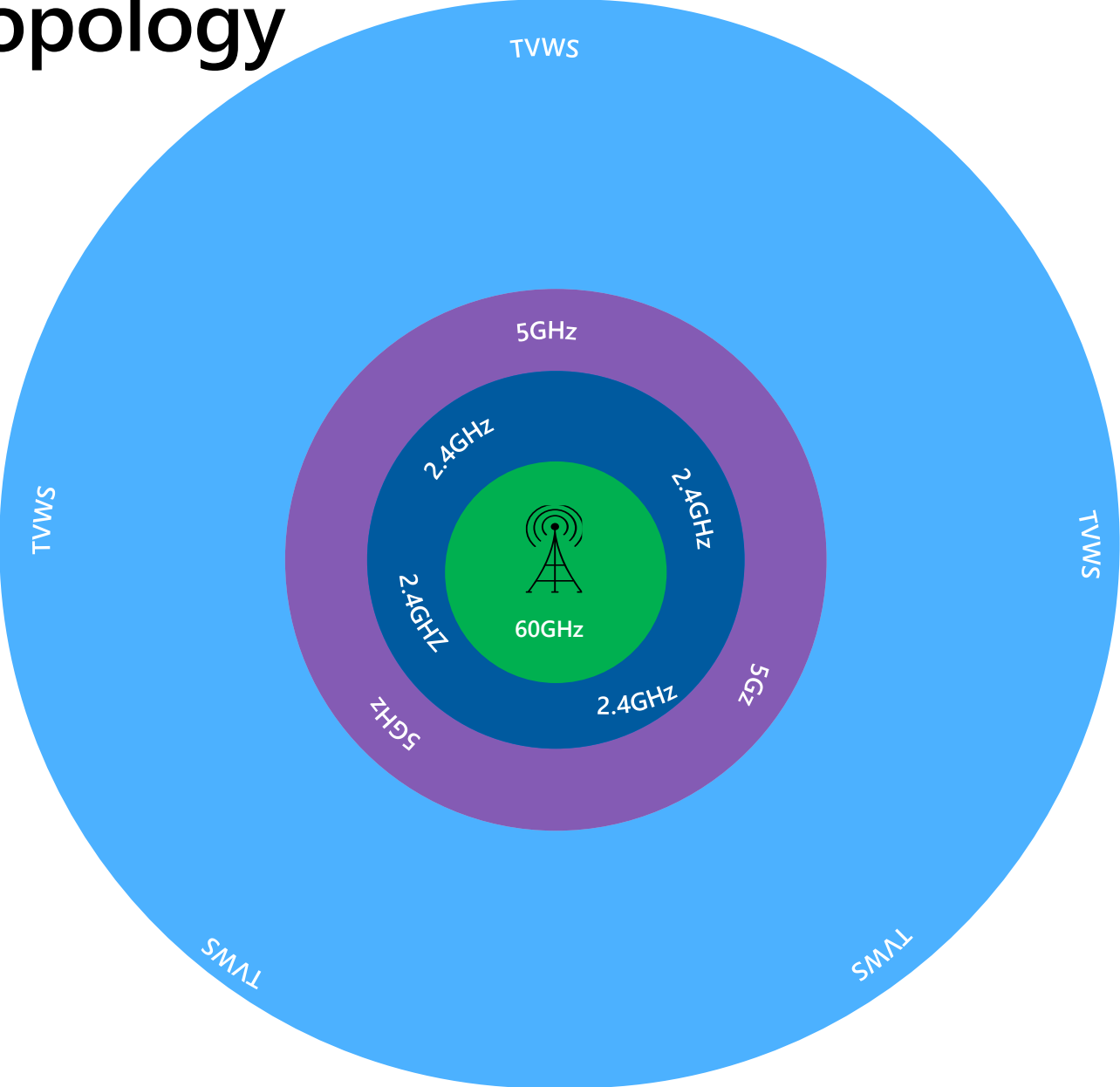
Hybrid Network Topology



- Fiber
 - Microwave
 - Wi-Fi
 - mmwave
- ➔
- Urban
 - Licensed/Unlicensed
 - LOS
 - Wireless + Wired
-
- 3.5GHz
 - 5.8GHz
 - Satellite
- ➔
- Urban/Rural
 - Licensed/Unlicensed
 - LOS
 - Wireless
-
- TVWS
(470 -698 MHz)
- ➔
- Urban + **Rural**
 - Unlicensed
 - LOS + **NLOS**
 - **Wireless**

Technology selection depends on use cases, coverage, and capacity requirements.

Achievable Coverage and Performance Based on Hybrid Topology



60GHz: mmWave (2000MHz Bandwidth)

1000Mbps **Features:** 0.1miles range, 2000MHz bandwidth, 10000Mbps maximum throughput

2.4GHz: Wi-Fi (40MHz Bandwidth)

300Mbps **Features:** 0.15miles range, 40MHz bandwidth, 300Mbps maximum throughput

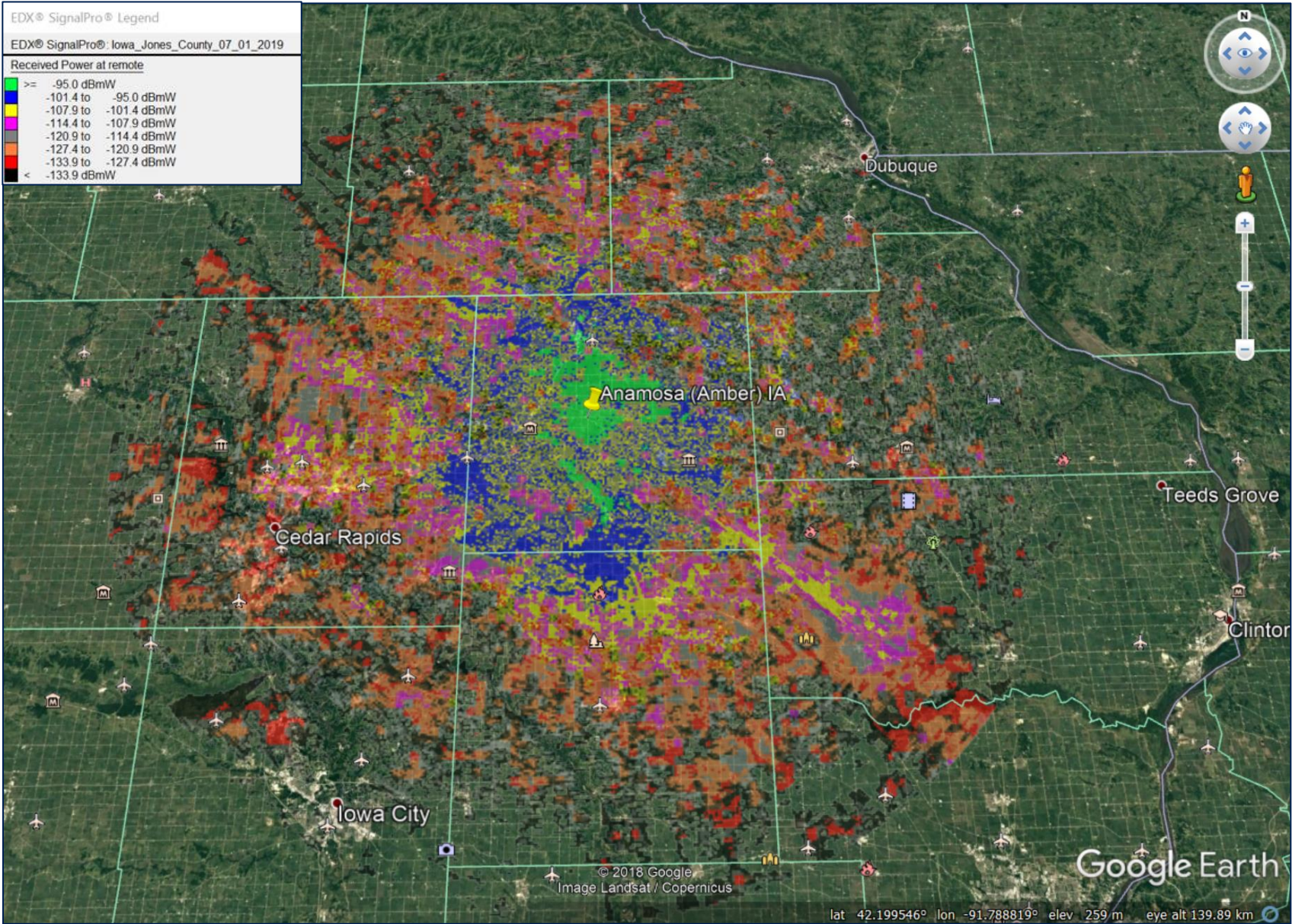
5GHz: Mid band (80MHz Bandwidth)

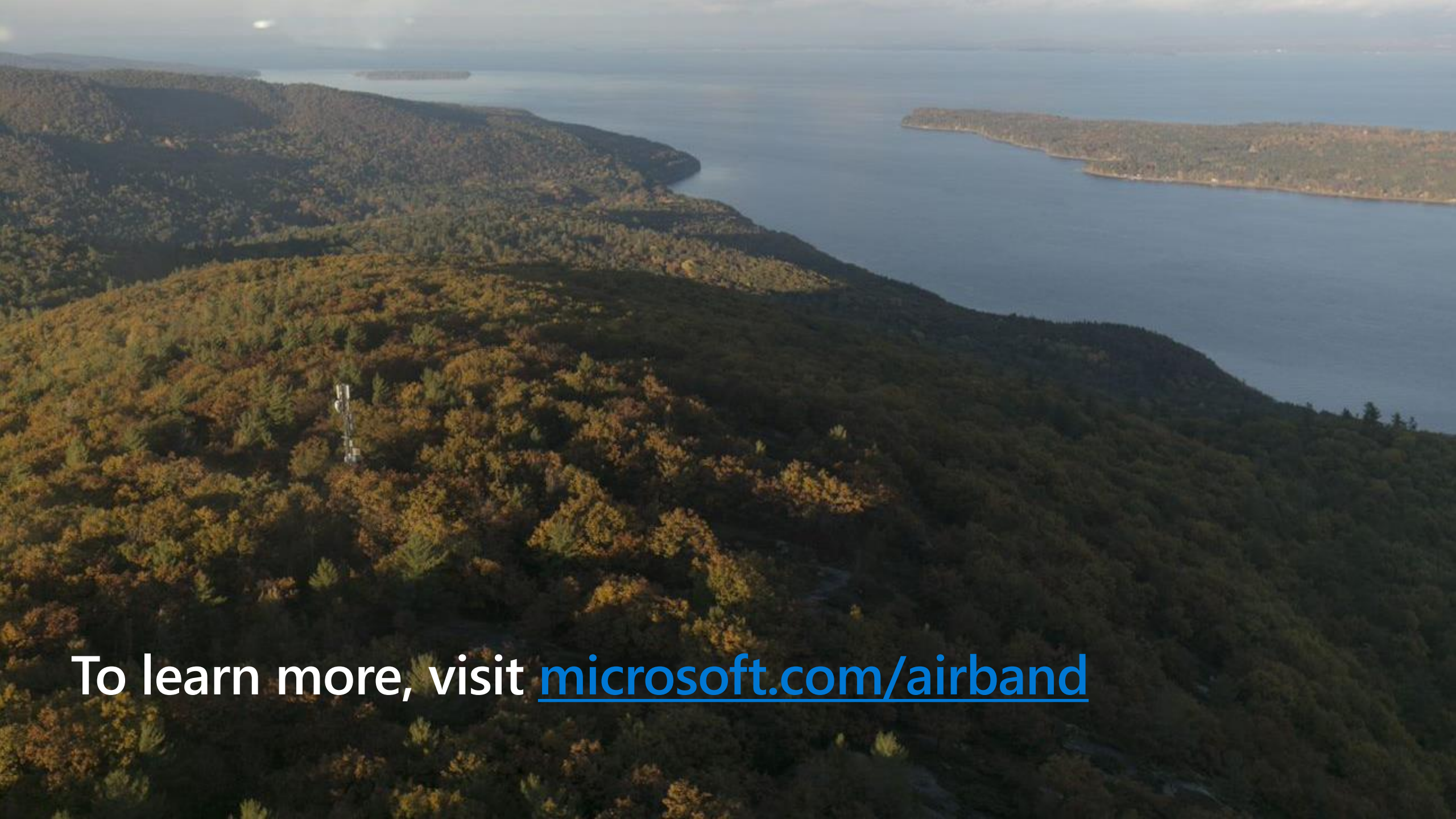
1200Mbps **Features:** 1.25miles range, 80MHz bandwidth, 1200Mbps maximum throughput

TVWS: Television white spaces (24MHz Bandwidth)

100Mbps **Features:** 6 miles range, 24MHz bandwidth, 100Mbps maximum throughput

FarmBeats Agriculture Pilot in Jones County, Iowa – TVWS Narrowband IoT Propagation Study





To learn more, visit microsoft.com/airband